COURSE PROSPECTUS

Name of the Division: *Smart Technology & Education Division (STED)*

Name of the Course: *PG Program in Embedded System Design and Internet of Things*

Course Code: *ES500*

Mode of Conduction: *Online*

Starting Date: *19/08/2024*

Duration: *600 Hours /26 Credits*

Course Fee: *₹ 40,000/- Including Taxes*

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Preamble:

In today's world, Embedded Systems and IoT are all over homes, offices, cars, factories, hospitals, and Industries. The inherent value of these technologies lies in their pervasiveness. They are literally embedded in all electronic products, from consumer electronics to office automation, automotive, medical devices, and communications. They make the products smart, and connected and are responsible for differentiating the products in the market.

Developing tomorrow's industrial infrastructure is a significant challenge. This course goes beyond the hype of consumer IoT to emphasize a much greater space for potential embedded system applications and growth. The primary objective of this specialization is to closely examine emerging markets, technology trends, applications, and skills required by engineering students or working engineers, exploring career opportunities in the Embedded System Design and IoT space. This course is conducted in collaboration with ARM and the syllabus has been updated based on the ARM University Program Contents.

This Embedded System Design and IoT course focuses on the Architecture and Programming of Embedded Processors and the development of Embedded and IoT applications using Embedded/Real-Time Operating Systems. Internet of Things (IoT), Industrial IoT, and Embedded Product Designs are discussed in detail. As part of the project work, a proof-of-concept prototype design of an Embedded / IoT system has to be undertaken by participants to be industry-ready.

Objective of the Course:

PG Program in Embedded System Design & IoT Course is intended to impart skills essential for designing and implementing Embedded and IoT systems using appropriate hardware and software tools. This course offers a range of topics of immediate

relevance to the industry and makes the participants exactly suitable for the Embedded and IoT Industry

Outcome of the Course:

- Provide the participants with in-depth knowledge and skills required by Embedded Systems and IoT Companies around the globe by imparting a comprehensive understanding of the fundamental principles, methodologies, and industry practices.
- Makes the successful participants readily employable in multiple roles available in the Embedded and IoT Industry
- Enhances the skillsets and confidence for Embedded Startups

Expected Job Roles:

- Embedded Design Engineer
- Embedded Software Engineer
- Embedded Firmware Engineer
- Embedded Hardware Engineer
- Embedded System Programmer
- Embedded Trainee Engineer
- IoT Developer
- IoT Solution Architect
- IoT Hardware Design engineer
- IoT Network Engineer

Course Structure: The ES500 course has seven modules including project work. The Participants are required to do project work in any one of the modular areas, to be eligible for the issue of a PG Program in Embedded System Design & IoT.

The modules are as follows:

Module Code*	Module Name	Duration (hrs)			Credits
		Theory	**Lab**	**Total**	
ES 501	Embedded C and ARM Cortex Microcontrollers	13	52	65	3 (1+2)
ES 502	Embedded RTOS	13	52	65	3 (1+2)
ES 503	Imbedded Linux	13	52	65	3 (1+2)
ES 504	Internet of Things	13	52	65	3 (1+2)
ES 505	Scripting Tool & GUI development for Industrial Application	13	52	65	3 (1+2)
ES 506	Industrial Product Design	13	52	65	3 (1+2)
ES 507	Project		210	210	8
	Total	**78**	**522**	**600**	**26**

These modules are conducted as workshops. Modular admission is available and prerequisites for the modular admission are applicable, only to the B.Tech ongoing students. Those who are completing all the modules are eligible for PG Certificate on Submission of Original/ Provisional Certificate of Qualifying Degree.

Other Contents

I. **Course Fees**: Course fee is ₹40,000/- (All taxes are included)

* Taxes Included (Currently GST @18%), and revisions, if any by Government shall be applicable at the time of payment.

** B.E/B.Tech Ongoing Students should submit a bonafide certificate from HoD of the respective college of study and should meet prerequisite as mentioned in the <u>syllabus.</u>

II. **Registration Fee:** An amount of ₹1000/- (including all taxes as applicable) (will be adjusted to the total fee payable) should be paid at the time of registering for the course.

This fee shall be considered as part of course fee, if the student joins the course. If a student register and pay for more than one course and join for any one course, all such amount will be adjusted against the course fee payable. If the candidate does not join or fails to complete the course the amount will be forfeited.

However above the registration fee shall be refunded on few special cases as given below.
 ➢ Course postponed and new date is not convenient for the student
 ➢ Course cancelled in advance, well before the admission date

III. **Course Fee Installment Structure**:

Students can pay the full fees of (₹40,000/-) in advance or as installments as given below.

Fees	*Amount	# Due Date (on or before)
Registration Fee	₹1000/-	During Online Registration
1st Installment	₹ 20,000/-	*19/08/2024*
2nd Installment	₹ 19,000/-	*30.12.2024*
Total Fee	₹ 40,000/-	*30.12.2024*

*Taxes Included (Currently GST @18%), and revisions, if any by Government shall be applicable at the time of payment.

Fine will be applicable to late fee payment as given below;

Sl. No.	Description	Fine
1.	Late fee payment within two weeks after due date	18% (annually) of the outstanding dues
2.	After second week of due date the candidate has to pay readmission fees along with the fine	Readmission fee ₹250/- plus fine of 18% (annually) of the outstanding dues
3.	The candidate has to discontinue the course after third week from the due date	

IV. **Eligibility:** B.E /B.Tech completed students of the following branches:

Electronics/ Electronics & Communication/ Electrical/ Electrical and Electronics/Instrumentation/ Biomedical /Computer Science/Information Technology.

B.E /B.Tech ongoing students of the above branches are eligible to enroll for the modular workshop subject to meeting the pre-requisite for each module as mentioned in *syllabus*.

For more details about the policy refer:
http://nielit.gov.in/sites/default/files/course/NIELITCalicutPoliciesShortTerm Courses.pdf

V. **Number of Seats :***40*

VI. **Selection of candidates:** Selection is based on the marks in the qualifying Degree.

VII. **Test/Interview:** *Not Applicable*

VIII. **Counseling/Admission** : *19/08/2024*

IX. **Important Dates:**

Last date for receiving online application for the course with payment of *₹1000/-* for registration. *Candidates applying after this date will be considered in spot admission against vacancy.*	***08.08.2024***
*Publication of **First selection list** in our Website.*	***09.08.2024***
*Last date for Payment of the **first installment fee of ₹20,000/-.***	***19.08.2024***
Counseling and Admission	***19.08.2024***

Commencement of Classes	*19.08.2024*

X.   **Course Timings**: Classes will be *between 9.30 am to 5.00 pm. **The hands-on session using Remote Hardware Lab at NIELIT Calicut***.

XI.   **Placement** : *visit http://nielit.gov.in/content/placement-3*

XII.   **Lab Facilities** *:* https://www.nielit.gov.in/calicut/calicut/content/embedded-system-group

XIII.   **Course Contents :** Course Syllabus

Click here for General Terms and Conditions – Applicable to all courses